

CORNING GLASS WORKS
CORNING
RALEIGH, NORTH CAROLINA

ELECTRONIC RESEARCH LABORATORY

3800 ELECTRONICS DRIVE
TEL: 919 ~~XXXX~~ 876-1100

February 27, 1970

Ref: Contract

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The contract referenced above is scheduled to terminate on March 15, 1970. Work on the contract began June 15, 1968 and initial work was devoted to the fabrication for evaluation of scattering particle sample screens. More recently, work has concentrated on lenticular screens due to the advantages offered which are unattainable with scattering screens.

The initial work on lenticular screens has demonstrated that the critical spatial relationships required can be achieved by employing the photographic process in a self-alignment technique. The process involves a number of steps and nuisance type difficulties have so far precluded the completely satisfactory attainment of all of them on any one sample run. The optical quality leaves something to be desired, therefore, even though the process has been proven in concept.

We now consider we are at the threshold of achieving a good self-aligning mask together with good bonding of the various screen components to a substrate. The key element is a 2½ mil thick Estar® film base bearing on one side 649GH photograph emulsion and on the other a transparent gelatin layer. Lenticules are cast on the gelatin layer and the emulsion forms the self-aligning mask. The emulsion can be bonded to the substrate satisfactorily. The emulsion reverses well, is a high gamma type and the slow speed resists fogging. Thus, the use of this key element promises to overcome many difficulties now experienced and to permit the achievement of good optical quality.

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The film can be obtained from Kodak in 50" width which is a decided advantage. A special order is required which normally takes two months. We hope to be able to improve this, however.

We anticipate that the main properties achievable with the lenticular design we are in the process of mechanizing are double the gain of comparable scattering screens, good suppression of ambient light reflections and hence retention of aerial image contrast and a light spreading half angle slightly less than 30° . Resolution is not expected to be as good as scatter screens and the diffraction colors seen on the present 2" square sample will still be present. If these are of an objectional degree, an improvement can be made by randomizing the ruling. It would not be possible to do this under the presently requested extension, however.

We request a four-month extension to July 15, 1970 of the present contract, at no increase in funding beyond that provided for by the present contract to pursue mechanization and improvement of the lenticular screen. In particular, a great improvement in the 4" square deliverable samples can be expected through our investigating and evaluating the above-mentioned materials and techniques during this requested extension period compared to the samples we can deliver against a March 15th termination date.

It is estimated that by the end of the present contract period (March 15, 1970), a total of [] in contract funds will be remaining. In order to accomplish the objectives outlined in this letter, we expect to use the equivalent of 22 manweeks of scientist time and a technician one-fourth time. During the proposed 4-month extension period (March 15, 1970 through July 15, 1970), the allocation of manpower and funds for the contract would be as follows:

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We will appreciate receiving your reply on this request as soon as possible.

Very truly yours,

CORNING GLASS WORKS

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Manager, Administrative Services

DAH:ngw

PERIODS FROM THE START OF THE PROGRAM

Start June
16, 1968

1968-) (-1969

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

System Analysis
Discrete Particle
Screens

- a) Screen Im-
provement
- b) Reduction of
Surface re-
flections
- c) Substrate
Darkening In-
vestigations
- d) Sample Screen
Fabrication
- e) Application
Evaluation

Lenticular Screens

- a) General Inves-
tigations
- b) Optical Quality
Improvement
- c) Mechanical In-
tegrity Im-
provement
- d) Develop Self-
Aligning Mask
- e) Sample Screen
Fabrication

Progress Reports

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31 32 33 34 36 37 38 39 40
35

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41 44
42 45
43 46

Final Report